

## PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING  
OF A CHANGE(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

JONES, Stephen, Anthony  
Adamson Jones  
Broadway Business Centre  
32a Stoney Street  
Nottingham NG1 1LL  
ROYAUME-UNI

Date of mailing (day/month/year) 30 October 2000 (30.10.00)	<b>IMPORTANT NOTIFICATION</b>
Applicant's or agent's file reference SAJ/NP1126WO	
International application No. PCT/GB00/00747	International filing date (day/month/year) 02 March 2000 (02.03.00)

1. The following indications appeared on record concerning:	
<input type="checkbox"/> the applicant	<input type="checkbox"/> the inventor
<input checked="" type="checkbox"/> the agent	<input type="checkbox"/> the common representative
Name and Address JONES, Stephen, Anthony Lewis & Taylor 49 Stoney Street Nottingham NG1 1LX United Kingdom	State of Nationality
	State of Residence
	Telephone No. 115 924 2969
	Facsimile No. 115 924 2968
Teleprinter No.	
2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:	
<input type="checkbox"/> the person	<input checked="" type="checkbox"/> the name
<input checked="" type="checkbox"/> the address	<input type="checkbox"/> the nationality
<input type="checkbox"/> the residence	
Name and Address JONES, Stephen, Anthony Adamson Jones Broadway Business Centre 32a Stoney Street Nottingham NG1 1LL United Kingdom	State of Nationality
	State of Residence
	Telephone No. 115 924 7147
	Facsimile No. 115 924 7148
Teleprinter No.	
3. Further observations, if necessary:	
4. A copy of this notification has been sent to:	
<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned
<input checked="" type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Lazar Joseph Panakal
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

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## PATENT COOPERATION TREATY

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## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents  
United States Patent and Trademark  
Office  
Box PCT  
Washington, D.C.20231  
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing:

14 September 2000 (14.09.00)

International application No.:

PCT/GB00/00747

Applicant's or agent's file reference:

SAJ/NP1126WO

International filing date:

02 March 2000 (02.03.00)

Priority date:

11 March 1999 (11.03.99)

Applicant:

HOLLIICK, David, John

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International preliminary Examining Authority on:

15 July 2000 (15.07.00)

☐ in a notice effecting later election filed with the International Bureau on:2. The election ☒ was☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer:

J. Zahra

Telephone No.: (41-22) 338.83.38

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## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference SAJ/NP1126WO		<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/GB00/00747	International filing date (day/month/year) 02/03/2000	Priority date (day/month/year) 11/03/1999	
International Patent Classification (IPC) or national classification and IPC H01R4/36			
Applicant B & H (NOTTINGHAM) LIMITED et al.			

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 5 sheets, including this cover sheet.

- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand  15/07/2000	Date of completion of this report  05.03.2001
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer  Lendfers, P  Telephone No. +49 89 2399 2933 

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# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/00747

## I. Basis of the report

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments (Rules 70.16 and 70.17).):*

### Description, pages:

1-5 as originally filed

### Claims, No.:

1-12 as originally filed

### Drawings, sheets:

1/2,2/2 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

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# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/00747

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)	Yes:	Claims	1-12
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-12
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-12
	No:	Claims	

2. Citations and explanations  
**see separate sheet**

## VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:  
**see separate sheet**

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Section V:

The invention relates to an electrical connector comprising a connector body with a tubular socket to receive, in use, an electrical conductor, clamping means arranged to secure the electrical conductor within the socket.

Such an electrical connector is known from document GB-A-2 299 901. This document discloses an electrical connector comprising first and second sockets. The second socket is of tubular configuration, having a blind bore which in use receives an end of a cable, and includes two threaded apertures into which bolts are screwed to clamp the cable end in position. The first socket is of part-cylindrical configuration, a slot being formed in one side, and two threaded apertures which, in use, receive locking bolts to clamp the end of another cable to the lower surface of the first socket. Furthermore, a tubular sleeve fits around the first socket.

According to the invention a socket insert is fitted within the socket so as to reduce the effective size of the socket, wherein the socket insert is tubular and is adapted to be deformed by the clamping means into retaining engagement with the electrical conductor. The deformability of the socket insert enables secure retention of the conductor within the connector.

Document GB-A-2 299 901 is silent on the use of socket inserts.

Therefore, the combination of the features of each of the independent claims 1 and 9 is neither known from, nor rendered obvious by, the available prior art. Consequently, the subject-matter of independent claims 1 and 9 is new and inventive (Articles 33(2) and 33(3) PCT). The subject-matter of dependent claims 2 to 8 and 10 to 12 fulfils as well the requirements of novelty and inventive step. Furthermore, claims 1 to 12 are considered as susceptible of industrial application.

Section VII:

1). Independent claim 1 is not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would have been appropriate, with those features known in combination from the prior art (document GB-A-2 299 901) being placed in the preamble (Rule 6.3(b)(i) PCT) and with the remaining features being included in the

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**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/GB00/00747

characteris- ing part (Rule 6.3(b)(ii) PCT).

2). The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

3). Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in documents GB-A-2 299 901 is not mentioned in the description, nor is this document identified therein.

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# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>SAJ/NP1126W0</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/GB 00/ 00747</b>	International filing date (day/month/year) <b>02/03/2000</b>	(Earliest) Priority Date (day/month/year) <b>11/03/1999</b>
Applicant  <b>B &amp; H (NOTTINGHAM) LIMITED et al.</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 2 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established by this Authority to read as follows:

**ELECTRICAL CONNECTOR WITH DEFORMABLE INSERT**

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

4  
☐ None of the figures.

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## INTERNATIONAL SEARCH REPORT

International Application No

/GB 00/00747

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC 7 H01R4/36

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H01R

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 2 299 901 A (B & H) 16 October 1996 (1996-10-16) page 5, paragraphs 1-3,5; figures 1-4	1,6-8
A	GB 2 266 628 A (OY SEKKO) 3 November 1993 (1993-11-03) page 2, paragraphs 3,4; figure 1	1,7,8

☐ Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

\* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

25 May 2000

Date of mailing of the international search report

05/06/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
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Authorized officer

Alexatos, G

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

/GB 00/00747

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
GB 2299901	A	16-10-1996	NONE	
GB 2266628	A	03-11-1993	FI 216 U	12-08-1992
			NO 305268 B	26-04-1999
			SE 507195 C	20-04-1998
			SE 9301242 A	17-10-1993

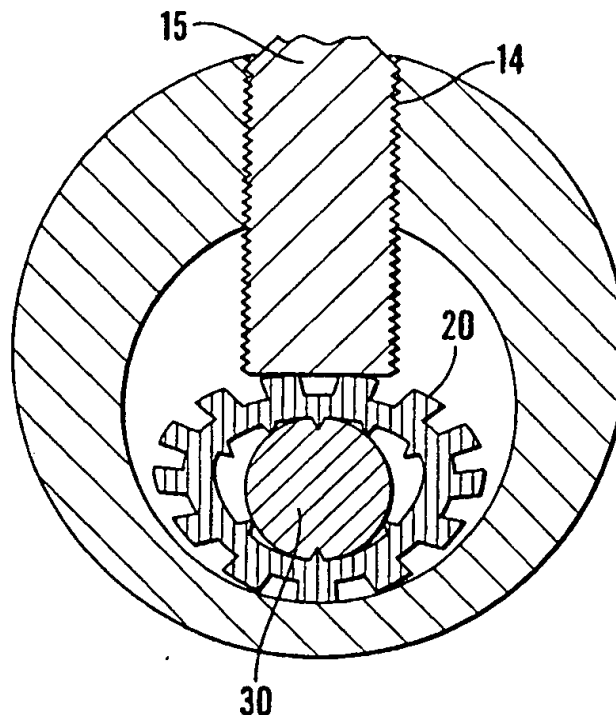
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## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>7</sup> :</b> <b>H01R 4/36</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 00/54371</b> <b>(43) International Publication Date:</b> 14 September 2000 (14.09.00)
<b>(21) International Application Number:</b> PCT/GB00/00747 <b>(22) International Filing Date:</b> 2 March 2000 (02.03.00) <b>(30) Priority Data:</b> 9905505.5                      11 March 1999 (11.03.99)                      GB <b>(71) Applicant (for all designated States except US):</b> B & H (NOTTINGHAM) LIMITED [GB/GB]; Middlemore Lane West, Aldridge, West Midlands WS9 8EA (GB). <b>(72) Inventor; and</b> <b>(75) Inventor/Applicant (for US only):</b> HOLLICK, David, John [GB/GB]; The Old Chapel House, 64 Station Road, Chinnor, Oxford OX9 4PZ (GB). <b>(74) Agent:</b> JONES, Stephen, Anthony; Lewis & Taylor, 49 Stoney Street, Nottingham NG1 1LX (GB).		<b>(81) Designated States:</b> AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i>

**(54) Title:** ELECTRICAL CONNECTOR WITH DEFORMABLE INSERT**(57) Abstract**

An electrical connector comprises a connector body (10) with a tubular socket (12) to receive an electrical conductor (30). Clamping means (15) are arranged to secure the electrical conductor (30) within the socket (12). A socket insert (20) fits within the socket (12) so as to reduce the effective size of the socket (12). The socket insert (20) is tubular and is adapted to be deformed by the clamping means (15) into retaining engagement with the electrical conductor (30).



*FOR THE PURPOSES OF INFORMATION ONLY*

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
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EE	Estonia	LR	Liberia	SG	Singapore		

## ELECTRICAL CONNECTOR WITH DEFORMABLE INSERT

This invention relates to improvements in electrical connectors, in particular connectors for the mechanical connection or termination of one or more electrical conductors.

5      Electrical connectors comprising a tubular socket into which the end of an electrical conductor is inserted are widely used. Clamping bolts are commonly held in threaded bores in the wall of the socket and are used to fix the conductor to the internal surface of the socket, thereby establishing electrical and mechanical connection between the conductor and the connector.

10      A disadvantage of connectors of this type is that the internal dimensions of the socket (normally the diameter in the case of a socket of circular bore) are fixed. If the conductor inserted into the socket has a diameter substantially less than the internal diameter of the socket then the assembly of socket and conductor will be asymmetrical. This creates increased electrical stress when voltage is applied and can lead to difficulty in achieving effective insulation around the assembly.

15      It is known to utilise socket inserts or shims to make the effective internal dimensions of the socket more suitable for conductors of reduced diameter. However, known forms of socket insert suffer from the disadvantage that they may be difficult to position correctly, may be dislodged and lost prior to use, and/or may interfere with the clamping action of the bolts.

20      There has now been devised an improved form of electrical connector which overcomes or substantially mitigates the above mentioned disadvantages.

According to the invention, an electrical connector comprises a connector body with a tubular socket to receive, in use, an electrical conductor, clamping means arranged to secure the electrical conductor within the socket, and a socket insert fitting within the socket so as to reduce the effective size of the socket, wherein the socket insert is tubular and is adapted to

be deformed by the clamping means into retaining engagement with the electrical conductor.

The connector according to the invention is advantageous primarily in that the socket insert reduces the effective diameter of the socket and hence reduces the eccentricity of the positioning of a small diameter conductor within the socket. This in turn improves the electric field properties of the completed joint and makes it easier to insulate. Apart from the provision of the socket insert, the connector may be of conventional design, enabling the socket insert to be used with readily available connectors. The deformability of the socket insert enables secure retention of the conductor within the connector. The socket insert is also relatively easy to manufacture and use.

- 10 The deformability of the socket insert requires that it be manufactured of a suitably deformable material. A preferred material is aluminium, especially 99.9% pure aluminium. The socket insert is conveniently formed by an extrusion process.

- 15 The deformability of the socket insert may be further enhanced if it is formed with a castellated or corrugated profile. A socket insert of such a form represents a further aspect of the invention, which thus provides a socket insert for an electrical connector having a socket in which, in use, an electrical conductor is received, the socket insert being tubular and deformable, and having a castellated or corrugated profile. In a further aspect, the invention provides an electrical connector including such a socket insert.

- 20 By a "corrugated" profile is meant a profile in which the material of the socket insert is of substantially uniform thickness but is formed into a succession of peaks and troughs. The peaks and troughs may have any suitable form, eg a saw-tooth type form or a wave-like form.

- 25 The term "castellated" means an arrangement in which the thickness of the wall of the insert is non-uniform, the wall of the socket being formed with a series of longitudinal ridges spaced, preferably equally spaced, around the socket insert. The regions between the ridges constitute regions of reduced thickness. The precise profile of the ridges and the intervening



regions may have any suitable form.

A castellated profile is particularly preferred, as the ridges support the side of the socket insert remote from the clamping means when the socket insert is engaged by the clamping means, and this gives rise to more controlled deformation of the socket insert and hence more  
5 secure and efficient electrical connection between the conductor and the connector body.

The internal surface of the tubular socket insert may be provided with serrations or tooth-like formations to improve the grip of the socket insert on the electrical conductor and/or to improve the manner in which the socket insert is deformed in use.

The socket is most preferably a bore, most commonly a blind bore, of circular cross-section.

10 The clamping means preferably comprises one or more clamping bolts held in threaded bores in the connector body such that they extend into the socket so as to clamp, via the socket insert, a connector inserted therein against the opposing surface of the socket. The bolts may have shearable heads which shear off when the applied torque exceeds a predetermined value.

The invention will now be described in greater detail, by way of illustration only, with  
15 reference to the accompanying drawings, in which

Figure 1 is a perspective view of the end of a connector body forming part of an electrical connector according to the invention;

Figure 2 is an end view of a first embodiment of a socket insert for use with the connector body of Figure 1;

20 Figure 3 is a cross-sectional view of an assembled connector comprising the connector body of Figure 1 and the socket insert of Figure 2, with an electrical conductor inserted into the socket insert but prior to securing of the conductor;

Figure 4 is a view similar to Figure 3, but after securing of the conductor within the connector; and

Figure 5 is a cross-sectional view of a second embodiment of a socket insert.

Referring first to Figure 1, a connector body 10 is formed from aluminium and comprises a  
5 tubular socket 12. The portion of the body 10 shown may be formed integrally with one or more similar parts incorporating further similar sockets, eg for end-to-end connection of two conductors. Alternatively, the body 10 may be formed integrally with a fixing flange for termination of the conductor.

A wall of the body 10 has a threaded bore 14 to receive a shear-head clamping bolt 15 (see  
10 Figures 3 and 4). The body 10 may be provided with more than one, eg two, such threaded bores 14.

A large diameter conductor may be inserted directly into the socket 12 and clamped using a bolt 15. For use with smaller diameter conductors, however, the socket insert 20 shown in Figure 2 is used. The insert 20 has the form of an extruded aluminium tube with a  
15 castellated profile. The internal bore 21 of the insert 20 is formed with a number of axial teeth 22 which enhance the engagement of the insert 20 with a conductor inserted into the bore 21.

The connector may be supplied with the insert 20 in position, in which case a simple resilient C-clip or the like (not shown), eg of plastics material, may be fitted into the open end of the  
20 socket 12 to prevent the insert 20 being dislodged prior to use.

In use, if a relatively large diameter conductor is to be clamped in the socket 12, the insert 20 is removed from the socket 12 and the conductor inserted. The clamping bolt(s) 15 are tightened until they clamp the conductor against the internal surface of the socket 12.

For a smaller diameter conductor 30 (see Figures 3 and 4), the insert 20 remains in position. The conductor 30 is inserted into the internal bore of the insert 20. The clamping bolt(s) 15 are then tightened until their tips engage and deform the insert 20. Continued tightening of the bolt(s) 15 securely clamps the conductor 30 within the socket 12, the head of each  
5 clamping bolt 15 shearing off when a predetermined torque is applied (as shown in Figure 4). The effect of the insert 20 is to displace the longitudinal axis of the conductor 30 closer to the centre line of the connector body 10 than would be the case if no insert were used. This improves the electric field properties of the completed connection and makes it easier to insulate. In addition, the same length of clamping bolt 15 can be used as for a larger  
10 diameter conductor.

The socket insert 40 shown in Figure 5 differs from that of Figure 2 in that it is of corrugated, rather than castellated, form.

Claims

1. An electrical connector comprising a connector body with a tubular socket to receive, in use, an electrical conductor, clamping means arranged to secure the electrical conductor within the socket, and a socket insert fitting within the socket so as to  
5 reduce the effective size of the socket, wherein the socket insert is tubular and is adapted to be deformed by the clamping means into retaining engagement with the electrical conductor.
2. A connector as claimed in Claim 1, wherein the socket insert is of aluminium.
3. A connector as claimed in Claim 1 or Claim 2, wherein the socket insert is formed  
10 with a castellated or corrugated profile.
4. A connector as claimed in Claim 3, wherein the socket insert has a castellated profile.
5. A connector as claimed in any preceding claim, wherein the internal surface of the tubular socket insert is provided with serrations or tooth-like formations.
6. A connector as claimed in any preceding claim, wherein the socket is a bore of  
15 circular cross-section.
7. A connector as claimed in any preceding claim, wherein the clamping means comprises one or more clamping bolts held in threaded bores in the connector body such that they extend into the socket so as to clamp, via the socket insert, a connector inserted therein against the opposing surface of the socket.
- 20 8. A connector as claimed in Claim 7, wherein the bolts have shearable heads which shear off when the applied torque exceeds a predetermined value.

9. A socket insert for an electrical connector having a socket in which, in use, an electrical conductor is received, the socket insert being tubular and deformable, and having a castellated or corrugated profile.
10. A socket insert as claimed in Claim 9, which is of aluminium.
- 5 11. A socket insert as claimed in Claim 9 or Claim 10, which has a castellated profile.
12. A socket insert as claimed in any one of Claims 9 to 11, wherein the internal surface of the tubular socket insert is provided with serrations or tooth-like formations.

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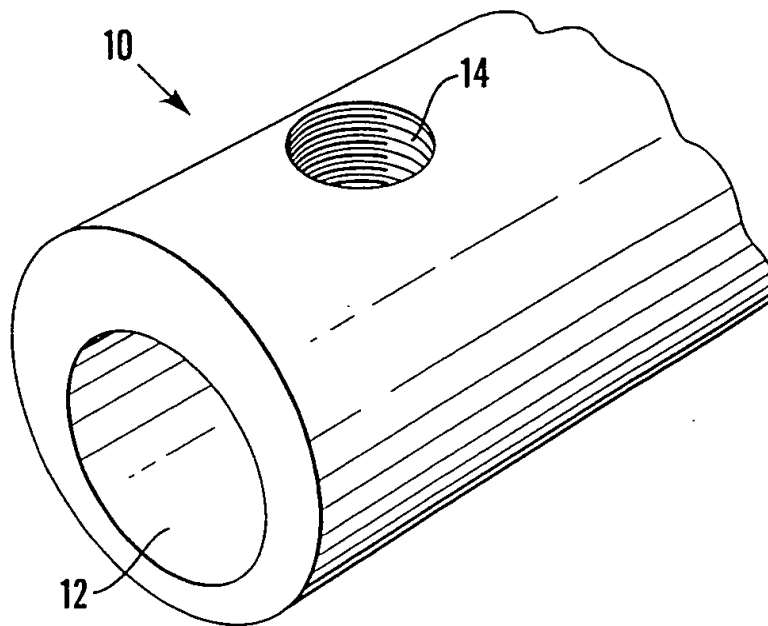


Fig. 1

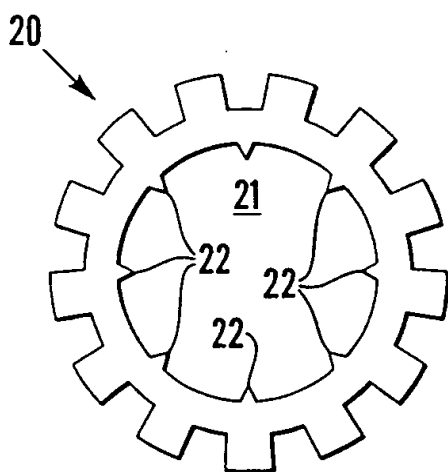


Fig. 2

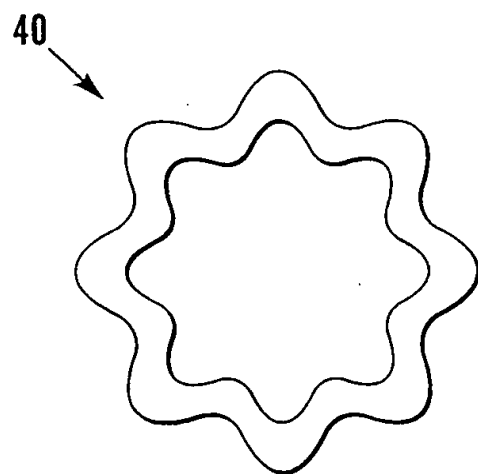
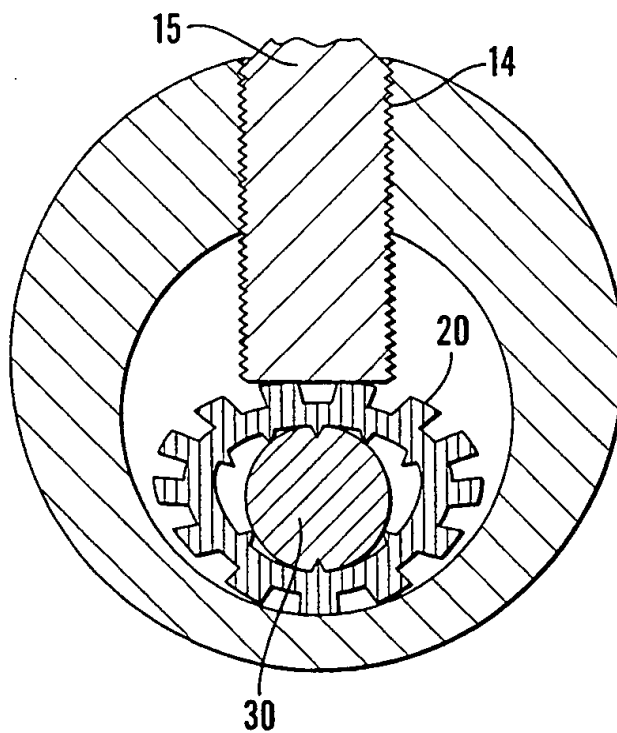
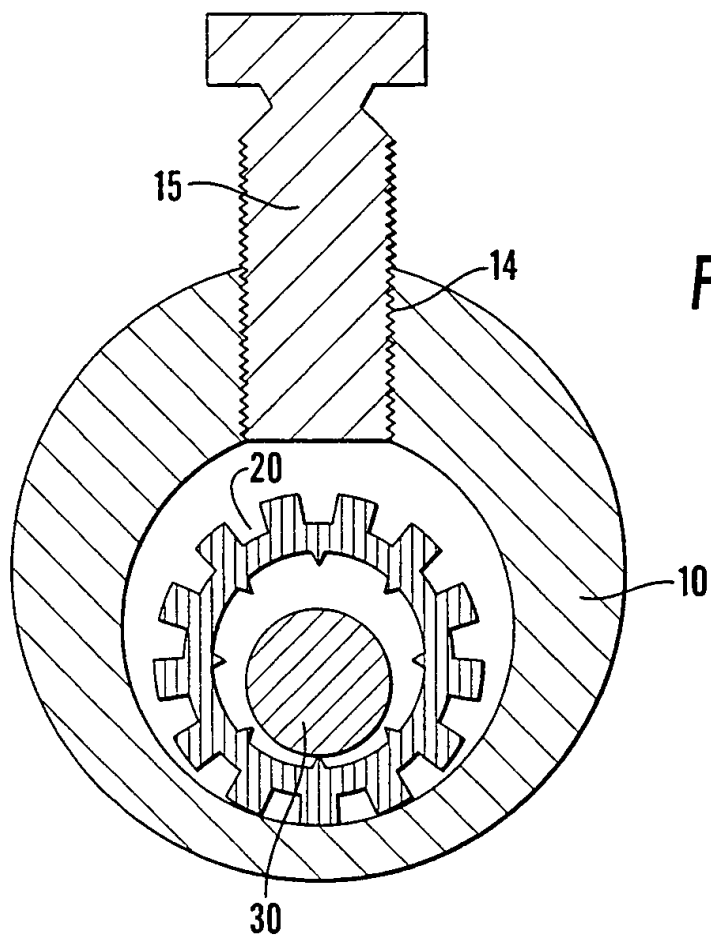


Fig. 5

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A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 H01R4/36

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H01R

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 2 299 901 A (B & H) 16 October 1996 (1996-10-16) page 5, paragraphs 1-3,5; figures 1-4 -----	1,6-8
A	GB 2 266 628 A (OY SEKKO) 3 November 1993 (1993-11-03) page 2, paragraphs 3,4; figure 1 -----	1,7,8



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

## \* Special categories of cited documents :

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Date of the actual completion of the international search

25 May 2000

Date of mailing of the international search report

05/06/2000

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